

ICARTT is a combined international effort of atmospheric researchers in North America and Europe. The campaign builds upon previous studies, most recently the 2002 New England Air Quality Study.

The three focus areas for this research are regional air quality, intercontinental transport, and radiation balance.

ICARTT

International Consortium for Atmospheric Research on Transport and Transformation

Comprehensive collection of data will occur primarily in July–August 2004 using ship, aircraft, balloon, satellite, and ground-based observing platforms. For more information, see www.al.noaa.gov/ICARTT.



NASA DC8

NASA Dryden Research Center's DC8 will do large-scale mapping of trace gases and aerosols over North America and the Atlantic Ocean for the Intercontinental Transport Experiment - North America.



NOAA WP-3D

The WP-3D measurements are part of the New England Air Quality Study-Intercontinental Transport & Chemical Transformation. It will map trace gases, aerosols and radiative properties over northeastern U.S.



DOE G1 Gulfstream

The U.S. DOE-operated G1 Gulfstream will collect data from locations downwind of urban areas, and sample point sources for trace gases and aerosols.



NOAA Ozone Lidar

As part of the New England Air Quality Study, a DC3 chartered by NOAA will map the regional distribution of boundary layer ozone and aerosol over New England.



NOAA Ronald H. Brown

This NOAA Research Vessel will use both *in-situ* and remote atmospheric sensors to examine low altitude outflow of pollution from the northeastern U.S.



UNH Atmospheric Observatory

Continuous year-round measurements of trace gases and aerosols collected at UNH AIRMAP sites document inter-annual variability and provide real-time data.



Convair 580

The Canadian Convair 580 will measure trace gases, aerosol and cloud properties over northeastern U.S. and southern Canada.



CIRPAS Twin Otter

The Naval Postgraduate School's Twin Otter will collect information on aerosol and cloud microphysics over the northeastern U.S.



The Study . . .

ICARTT brings together many diverse institutions and government agencies to conduct a joint regional air quality and climate study of unprecedented scope. The combination of these groups provides the shared experience, the intellectual strength, and the critical mass of measurement technology and platforms to produce a new understanding of complex atmospheric problems on scales both large and small.

The mosaic of ozone and aerosol precursor emissions that influence air quality over a broad region of northeastern North America provides the opportunity to investigate the chemical evolution of individual source categories and their synergism.

Regional air quality research probes the complex physical and chemical processes that drive our dynamic atmosphere. The goal of the research is to enhance our ability to predict and monitor future changes, and provide the scientific knowledge needed to make informed decisions.

The Campaign . . .

ICARTT will connect surface air quality with the important features of transport and chemistry that occur higher up in the atmosphere. During the 2004 study, a comprehensive network of ground-based sites and a NOAA research vessel will operate in the region. Ground-based sites provide a continuous record of regional surface air quality over the continent; the ship provides snapshots of polluted air leaving North America.

A critical component of the experiment will be a coordinated study of a polluted air mass as it moves from continent to continent. Aircraft operated as part of the ICARTT consortium will regularly fly over selected surface sites to provide horizontal extension and vertical information about the meteorology and composition of the atmosphere above these sites.

This information will be critical in evaluating and improving air-quality models and model forecasts. The data collected during the campaign will form the basis for understanding the impact of anthropogenic and natural emissions on regional and global climate, air quality, and human health.

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Partners

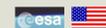
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 NOAA Climatic Monitoring and Diagnostic Laboratory
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Satellite Instruments

Satellites GOME, SCIAMACHY, MOPITT, and AIRS will sample selected chemical molecules from the atmosphere of the Northern Hemisphere.



Balloons

UNH and U. Hawaii's Smart Balloon with Targeted Wind Sensing O₃ sensor and U. Mass-Amherst's Small Lagrangian Observation Balloons (SLOBs) will track air masses over New England and the North Atlantic.



DLR Falcon

The German DLR Falcon will measure trace gases and aerosols over the eastern North Atlantic Region and western Europe.



BAE 146

The British BAE146 will measure trace gases and aerosols as part of the International Transport of Ozone Precursors (ITOP).



Sky Research Jetstream

The Jetstream 31 will measure aerosol and cloud radiative properties and effects over and around the Gulf of Maine.



CNRS Falcon

The French Falcon-20 will map O₃ and CO distributions in air masses over the eastern North Atlantic region and western Europe.



UMD / MDE Aztec

The University of Maryland and Maryland Department of the Environment's Aztec will focus on regional haze and photochemical ozone over the U.S. Mid-Atlantic and northeast.



Univ. Wyoming King Air

The COBRA project, based out of Bangor, Maine, will examine regional-scale budgets and forest-atmosphere exchange of CO and CO₂.



Scaled Composites — Proteus

Funded by the Integrated Program Office and NASA, the Proteus will carry a passive remote sensing payload.



Chebogue Point

Located approximately 10 km south of Yarmouth, Nova Scotia, this site will collect measurements of trace gases and aerosols.



PICO-NARE Station

Trace gases and aerosols are sampled at the only ground-based location in the central North Atlantic region frequently exposed to the free troposphere.



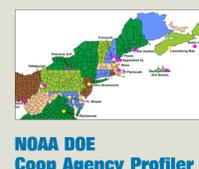
Shoals Marine Lab

The UNH observing station located 12 km off the NH coast is augmented with a suite of instruments measuring *in-situ* and remotely sensed trace gases, aerosols, and wind.



EPA Sampling Sites

State agency ozone monitoring stations will help in the daily forecasting of air quality over the northeast.



NOAA DOE Coop Agency Profiler

Wind profilers in the northeast will provide information on trajectories and transport of air masses on a regional scale.

